GENERAL BUSINESS

The general business sector portion of this report is organized into several sections. First, the small business to global corporations section serves to set the stage for business and Y2K in generic terms. The overview provides a look at the supply chain in general and highlights the interdependencies among links of the chain. Major initiatives within this section address activities of this Committee, an October committee hearing and a field hearing in Oregon; activities of the Manufacturing Extension Program; and United States Department of Agriculture (USDA) activities. In addition to the status information provided in discussion of the two Committee hearings, a separate section looks at two assessments of business. Finally, this section of the report focuses on several important industries not already addressed in the Committee's other seven sectors: pharmaceuticals, food and chemical manufacturing. Each of these industries has its obvious importance to the public's health, welfare, and well-being. The consequences to the public of any one of these industries having significant disruptions due to Y2K is unacceptable. Therefore, "urgent" efforts for preparedness must increase.

> *"I BELIEVE THAT AS BUSINESSES REVIEW THEIR SUPPLY CHAINS FOR Y2K PREPAREDNESS WE WILL SEE A 'FLIGHT TO QUALITY'."*
>
> *SENATOR BOB BENNETT*

SMALL BUSINESS TO GLOBAL CORPORATIONS

Overview

As is the case with ever-increasing aspects of daily life, business has grown more dependent on technology – especially information technology. Not only has it changed our daily lives, it has changed our daily business. Competition in local, state, regional and international business markets has shrunk profit margins for all businesses – from small independent businesses to global conglomerates. Shrinking profit margins have motivated companies to reduce expense and increase efficiency. Information technology enables companies to regain a solid hold on profitability and stimulate growth.

American business has developed and adopted just-in-time inventory as the standard. Lean manufacturing is central to the success of most large, complex factory operations. Precision farming has led to increased production with fewer resources. The supply chain from raw material/basic ingredient production/provider, to

preliminary processing, to manufacturer, to distributor, to wholesaler or retailer, and ultimately to final customer, has become ever tighter and shorter. The ripple effect from a problem at any point in this chain can be felt throughout the length of the chain. Information technology provides the backbone that fuses the chain at each link often via electronic commerce/electronic data interchange (EC/EDI).

Market and legal pressures continue to drive the majority of the decisions made within business, including Y2K decisions. A National Federation of Independent Business (NFIB) Y2K study correctly noted that "information describing the [Y2K] problem needs to address consequences of inaction if it is to stimulate action." Although this study provides an assessment of the preparedness of small business, there is no community-wide assessment of Y2K preparedness within overall business. However, as has been the case in previous Committee hearings, the larger companies that have adequate resources to address the issue are generally in a better position regarding their Y2K efforts than small- and medium-sized companies.

> *"WE MUST GET THE ATTENTION OF TOP MANAGEMENT AND RECOGNIZE THAT THIS IS NOT AN IT PROBLEM … THIS IS A MANAGEMENT CHALLENGE THAT MUST BE ADDRESSED BY THE HIGHEST CEO IMMEDIATELY."*
>
> *SENATOR BOB BENNETT -- JUNE 2, 1998*

Although it may seem contrary to what one would normally think, a system that actually crashes due to a Y2K problem causes a better situation than one that does not. In the case of a crashed system, it is clear there is a problem and a system diagnosis can reveal the cause. Technicians can fix the problem and bring the system back on line.

If a system experiences a Y2K related problem but does not crash, the system may continue to operate with the problem going unnoticed. System users will likely continue to use the system trusting it is operating correctly and the data or calculations it yields are correct. By the time the problem is identified, data may have been corrupted, business processes incorrectly run, and so forth. The impact of a Y2K problem such as this may far outreach the offending system to those systems with which it interfaces. Interfaces provide a conduit where one system's errors could propagate through numerous others.

Alan Arnold, a senior Ernst and Young manager, cites some personally observed examples of Y2K problems. He notes that orders did not process correctly, supply channels failed, accounting reports aged incorrectly and invoice systems billed incorrectly. Certainly payroll

systems are date-sensitive as they perform trivial to complex salary-related calculations. These are only topical examples of the Y2K problem.

MAJOR INITIATIVES

Northwest Year 2000 Summit

Key Oregon businesses and industries provided expert testimony on July 1, 1998, at the Northwest Year 2000 Summit held in Portland, Oregon. Senator Gordon Smith, a member of the Special Committee on the Year 2000 Technology Problem, initiated and presided over the event geared toward assessing the potential impact of Y2K on both small and big businesses. Additionally, Senator Smith focused on the question "What role, if any, should the federal government play with respect to Year 2000 technology issues?"

Following testimony from Integrated Measurement Systems, Intel Corporation, WRG Design Company, Providence Health System, and Bank of America, the audience actively participated. The audience consisted of individuals from the American Electronics Association, local business groups and the Tualatin Valley Economic Development Corporation.

The testimony emphasized the need to prioritize efforts to concentrate on those issues that are critical to hu-

man safety, defense, and well-being. This clearly was one of the Committee's first tasks as it established its eight sector areas: utilities, health services, telecommunications, transportation, finance, general government, general business and litigation (in priority order). Concerns about litigation were heard numerous times both in the context of limiting frivolous lawsuits and providing protection for statements made in good faith. Certainly, the latter was addressed when the Year 2000 Information and Readiness Disclosure Act became law on October 19th.

Finally, the issue of compliance certification validity was raised. This issue has yet to be resolved. However, the Committee continues to emphasize the need for audits as well as independent verification and validation as a crucial element of a sound Y2K program.

A Hearing -- Small Businesses to Global Corporations: Will They Survive the Year 2000?

On October 7, 1998, the Special Committee on the Year 2000 Technology Problem held a hearing focusing on areas within the general business sector. As with previous sector hearings, the purpose of the hearing was to increase awareness and disseminate reliable preparedness information as well as facilitate and stimulate solutions. Committee work supports polls showing only a small percentage of the American population has even heard of Y2K.

Awareness is a continual process that will extend up to and past January 1, 2000.

During the hearing, a reoccurring theme appeared throughout the examination of the supply chain, from global corporations to small- and medium-sized business. Witnesses talked about a move from high-risk vendors to lower risk vendors. Senator Bennett concluded, "as a result of Y2K, we are going to see significant shifts in where people go for materials, where people go for markets. It will produce some very challenging social problems all over the world. Those countries and companies that survive and thrive as a result of the long-range planning that they have done will be called upon to provide aid and assistance in those parts of the world where those challenges exist. I think the social impact of this is beyond anything we had previously thought it might be."

Witnesses at this hearing provided testimony that looked at the overall business community preparedness, both domestically and internationally, of small and large business, and used the pharmaceutical industry as a case study. Opening the hearing, a special witness highlighted the possible personal and dramatic nature of the Y2K problem. Laurene West shared her story and concerns to bring a human face to the Y2K problem.

West's personal testimony dramatically depicted the critical dependency that many Americans have on the pharmaceutical industry. Without a daily supply of medication and the coordinated efforts of healthcare providers, Ms. West will die due to the residual effects of a brain tumor and a postoperative infection. She has 34 years experience within healthcare: 20 as a registered nurse and, most recently, 14 years developing and implementing medical information systems. Her primary message was that many Americans would feel the impact of medication supply and distribution disruptions that are possible from Y2K. During her testimony, she explored issues related to stockpiling medication for those dependent upon regular drug doses.

Testimony from pharmaceutical representatives later in the hearing responded to Ms. West's supply chain issues. Richard Carbray, General Manager of Pleton's Pharmacy and Home Health Centers, noted that at the pharmacy level, it is possible to identify groups of patients through their systems to ensure plentiful and sufficient quantities of medication are on-hand for each particular group. At the same time, he cautioned that individuals getting an excess supply unnecessarily might cause the available supply to change drastically. Dr. Charles Popper, CIO of Merck & Co., echoed the caution noting that stockpiling an excess supply would likely cause more harm than good. Dr. Popper believes that a more focused approach will aid in understanding what steps are necessary to cover this situation. However, good data are necessary. The

Vital Signs 2000 survey will facilitate identifying supply chain sensitivities and risks.

Despite tremendous progress in resolving Y2K problems throughout 1998, much work remains in the limited time available. Almost a quarter of all companies worldwide, regardless of size or industry, has yet to start any Y2K effort, according to testimony by Lou Marcoccio, Rresearch Director for the Gartner Group. While the heavily regulated insurance, investment services and banking industries are the most advanced in their efforts, the healthcare, oil, education, agriculture, farming, food processing and construction industries are lagging dangerously behind.

Closely tied to the issue of failures is a misunderstanding of the Y2K problem. Many mistakenly think that Y2K problems will only manifest themselves at the stroke of midnight on December 31, 1999. However, Y2K problems have been occurring over the years and will continue to increase in occurrence as we approach January 1, 2000. Furthermore, they will continue to arise at a diminishing rate in the months following January 2000.

Mr. Marcoccio ended his testimony focusing on specific risks to the United States, stating, "from a domestic perspective, the risks that we have identified or highlighted as being most important are the interruptions or failures due to interdependencies and interconnections, be-

tween companies and countries." From an international perspective, Gartner Group's research indicates key foreign government agencies will likely experience significant failures. This fact highlights the critical nature and risk exposure of the interrelationship between our government agencies and militaries.

Shifting the focus to small business, the Honorable Fred Hochberg, Deputy Administrator, Small Business Administration (SBA), testified that to some extent, all of the nation's 23.6 million small businesses may be affected by Y2K. Their exposure is due to their reliance on office automation – hardware, software or equipment with embedded chips – any of which may be non-Y2K compliant. To assist the nation's small businesses as they cope with Y2K, the SBA emphasizes a three-step program:

1) conduct a self-assessment to identify possible affected computer hardware and software in addition to any equipment using embedded chips,

2) take action immediately, and

3) stay informed about Y2K issues. Included in this process are efforts to assess the Y2K status of businesses' suppliers and distributors as well as contingency plan development.

Although it may be "too late to start

early," it is not too late to start.

When questioned about the availability of loans for small businesses to initiate Y2K efforts, Mr. Hochberg noted that all of SBA's loan programs today are available for Y2K remediation work. Senator Gordon Smith concluded from further explanation, "there is really no reason people should not be doing this [taking action on Y2K] in small business."

The NFIB report, "Small Business and the Y2K Problem," sponsored by the Wells Fargo Bank, is discussed in the assessment section below. Later in this section, the Manufacturing Extension Program (MEP) Y2K toolkit is covered as a resource to small manufacturing businesses for Y2K information. Representatives of both the NFIB and MEP testified during the hearing.

National Y2K Action Week

The President's Council on Year 2000 Conversion designated October 19 - 23 as "National Y2K Action Week." While many large firms have grasped how a Y2K failure could severely affect their futures, smaller firms seem more focused on their immediate problems. Therefore, on October 19th, the President's Council on Year 2000 Conversion and more than 100 private sector organizations launched "National Y2K Action Week." The goal was to motivate managers of small- and medium-sized companies to take the neces-

sary steps to ensure that the technologies they and their business partners depend upon are Y2K ready. The program core consisted of hundreds of educational events hosted by federal government field offices. Participating entities included the following:

- SBA's 69 district offices, 935 small business development centers, 65 business information centers, 35 women's business information centers and 18 tribal business information centers;

- the Department of Commerce's 400 manufacturing extension partnership offices and 65 minority business development centers;

- USDA's 3,100 county extension offices;

- the Social Security Administration's 1,350 field offices; and

- the Department of Transportation's 120 field offices.

These offices helped managers assess their businesses' Y2K vulnerabilities, develop strategies for remediation and replacement work, find technical resources for addressing the problem and formulate contingency plans. To further address concerns of businesses, SBA has a small business answer desk, 1-800-827-5722, which provides

personalized response and assistance.

Manufacturing Extension Program (MEP) - Conversion 2000

MEP is a ready resource for small- and medium-sized manufacturing businesses. As a non-profit program of the Department of Commerce's National Institute of Standards and Technology (NIST), MEP has over 400 centers located throughout the 50 states and Puerto Rico. There are some 2,000 MEP engineers available nationally through these centers and field offices. They work directly with area firms to provide tailored expertise and services. Specifically targeting Y2K, NIST and the national MEP office developed a Y2K toolkit that manufacturing businesses that desire assistance can use. Thus, they are a prepositioned resource available to assist in completing a thorough Y2K assessment and in initiating an appropriate plan to remediate, test, and implement Y2K solutions.

The Y2K self-help tool, Conversion 2000, leads a small business through four phases of assessing and structuring a Y2K program. Phase I facilitates the internal inventory of hardware, software, and embedded systems. Next, in Phase II, a business criticality assessment is conducted and initial criticality in addition to confidence ratings are calculated. Phase III activities involve contingency planning. Finally,

Phase IV covers remediation planning and management.

Although this Y2K tool does not solve the Y2K problem for a business, it puts a business well on the road to soundly addressing Y2K, providing a roadmap of sorts. Furthermore, documentation produced from the use of Conversion 2000 will assist in application processing for SBA fast track loans for Y2K.

Cooperative State Research, Education, and Extension Service (CSREES), USDA - Y2K Community Awareness Outreach

CSREES is designed to be an agent for change and an international research and education network. Part of CSREES' mission is to promote informed decision-making by producers, families, communities and other customers through partnerships with public and private sectors that maximizes limited resources' effectiveness. Included in CSREES are over 9,600 local extension agents working in 3,150 counties nationwide; farm safety education programs in all 50 states and Puerto Rico; as well as international education programs taught by over 200 extension professionals in 17 countries.

As part of National Action Week,

CSREES rolled out its recently developed Y2K Community Awareness Outreach Toolkits. Five thousand of these "toolkits" were distributed to all county extension offices, USDA Foreign Agriculture Service's Agricultural Attaches, State Agriculture Commissioners, National Agricultural Statistics Service State Directors, the Land-Grant University System, 1994 Tribal Colleges and the Hispanic Serving Institutions.

Each "toolkit" consists of fact sheets, a media and information plan, a press release template, public service announcements (both written and recorded), a general public brochure, talking points and frequently asked questions. The fact sheets include: "Creating a Year 2000 Computer Action Plan," "Is Your Computer Ready for Y2K," "Preparing for the Year 2000 Computer Challenge" and "The Y2K Problem and Embedded Systems."

During the kick-off of National Y2K Action Week, USDA Deputy Secretary Richard Rominger noted that a memorandum of understanding (MOU) between the Departments of Agriculture and Commerce had been signed. The MOU focused on the needs of small businesses and manufacturers. As an outcome, it is likely that CSREES' "Y2K Toolkit" may merge with MEP's Conversion 2000 to form a single, more comprehensive "toolkit."

> **"TO STIMULATE ACTION, YOU MUST FIRST IDENTIFY THE CONSEQUENCES OF INACTION."**
>
> **MR. WILLIAM DENNIS, NFIB**

ASSESSMENTS

National Federation of Independent Business (NFIB)

On May 26, 1998, William Dennis, Senior Research Fellow for NFIB, published the report Small Business and the Y2K Problem. One of the most telling findings of the report was that over 80% of American small businesses are potentially exposed to Y2K problems. In Dennis' October 7th testimony, he further described the general assessment of small business. "A fifth of them do not understand that there is a Y2K problem. . . . They are not aware of it. A fifth of them are currently taking action. A fifth have not taken action but plan to take action, and two-fifths are aware of the problem but do not plan to take any action prior to the year 2000."

Approximately 330,000 small businesses that are computer dependent fall into this last two-fifths category. Dennis suggests that if they lose their computers or if their computers malfunction, it will result in a production or sales loss of 85%. They will be out of business, effectively, until they fix the problem.

Over 82% of small businesses have some level of direct Y2K exposure due to their reliance on information

technology and automation. The large majority of them, 81%, indicate awareness of the exposure. However, only half have taken or plan to take action in response to the exposure. The lack of action apparently comes from 77% of small businesses not considering Y2K to be a serious problem.

Indirect exposures to Y2K are sometimes overlooked. Figure 1 identifies some of the sources of indirect exposure that small businesses face. These exposures result from electronic interaction with business partners. Seventy-five percent of small businesses deal electronically with partners and thus are exposed to possible Y2K impacts if their partners are not prepared for Y2K. Exposure due to electronic interactions with financial institutions is clearly the smallest of those sources

> **30-50% OF ALL COMPANIES WORLDWIDE WILL EXPERIENCE AT LEAST ONE MISSION-CRITICAL FAILURE**

identified in NFIB's report. This exposure is probably smaller yet, since, as an industry, financial institutions are generally considered to be out front in their Y2K efforts.

Medium-sized businesses may actually face the greatest overall Y2K exposure. Small businesses are likely to have less technology insertion within the business community. In many cases, they may have the capability to go back to manual processing, if necessary. Even though small businesses generally lack the resources to adequately address Y2K issues, the impact of a failure is likely to be moderate. Medium-sized businesses, on the other hand, are more likely to depend heavily on technology. Manual processing may no longer present a viable option for medium-sized businesses. They may also lack the appropriate resources to remediate affected systems and devices. Given that small and medium-sized businesses provide over 51% of the private sector output, the lack of action on their part may translate into a larger ripple that moves through the closely linked supply chain.
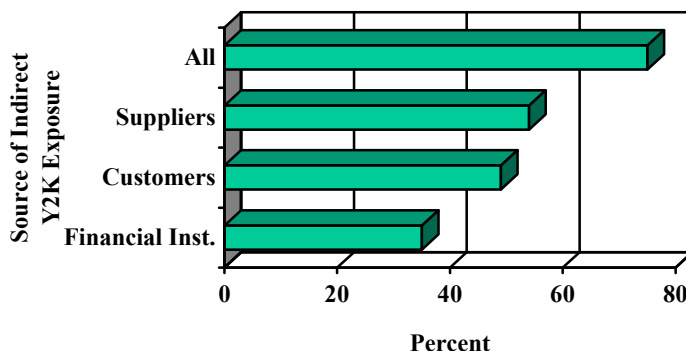
The NFIB report <u>Small Business and the</u>

Figure 1: Small Businesses With Indirect Y2K Exposure

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Y2K Problem is being updated. Data collection is complete for the update and its analysis is underway. The update should indicate the success of National Y2K Action Week.

The Gartner Group

The Gartner Group bases its research and analysis on data gathered from 15,000 companies in 87 countries. Data is updated every 90 days. The Gartner Group's research has concluded that of all companies and government agencies, 23% have yet to begin any Y2K action. Of these companies, 83% fall into the category of small companies.

Lou Marcoccio explained during the October 7th hearing that "a mission-critical failure means that a business interruption is likely to occur. It could affect revenue and will likely affect the continued operation of that business." The Gartner Group predicts that 30% to 50% of all companies worldwide will experience at least one mission-critical failure. Within the United States, that percentage drops to 15%. The typical amount of time that one of these critical failures is expected to last is at least 3 days at a recovery cost of between $20,000 and $3,500,000 (this estimated cost does not include any costs related to possible litigation).

Figure 2 graphically portrays the number of companies expected to experience at least one mission-critical failure. Gartner predicts there is an 80% probability that these ex-

pectations are correct. The horizontal axis indicates the size of company and government agencies. The vertical axis indicates the percentage of all companies or government agencies of a particular size that are expected to experience at least one mission-critical failure.
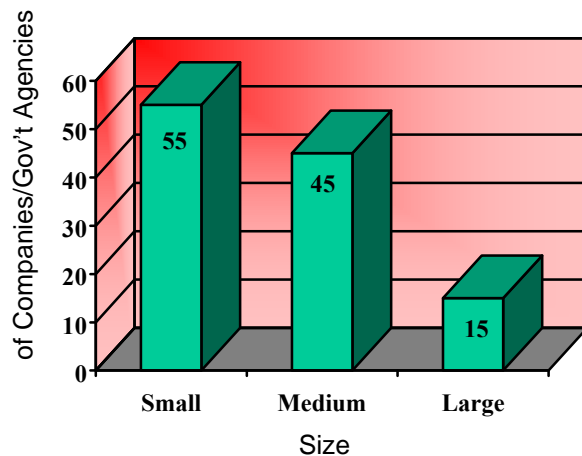

Figure 2: Predicted Mission-Critical Failures

Shifting to looking at predicted mission-critical failures by industry sector, some logical conclusions can be drawn. Those industries that are most likely to have experienced a Y2K related problem earliest generally began to address the problem at that time. However, it is interesting to note that often they did not begin addressing the problem from a total business perspective. Frequently, only those areas of the business that experienced the failure or were most closely related to it were addressed.

Heavily regulated industries also are generally in a better position with

their Y2K efforts than those without regulation. Gartner's research covers companies and organizations across 27 industries. As with its predictions for mission-critical systems based on size (figure 2), it has developed failure predictions for companies within these 27 industries. To characterize these predictions, Gartner established four risk categories.

Each risk category, identified in the far-right column of figure 3, describes the percentage, in the far-left column of figure 3, of companies in industries within the category that will experience at least one mission-critical system failure. Taken alone, one mission-critical system failure does not sound like much. However, when you understand that thousands to hundreds of thousands of failures

may occur either simultaneously or nearly simultaneously, the situation is much more serious.

Data provided by the Gartner Group and depicted in figure 3 clearly demonstrate that much work remains as we approach Y2K. For example, 50% of companies within the transportation industry will experience at least one mission-critical failure. Thus, the figure highlights those industries critical to our country's infrastructures that must continue to aggressively execute their Y2K plans as well as develop realistic and feasible contingency plans.

15%	Insurance, Investment Services, Banking, Pharmaceuticals, Computer Manufacturing	1
33%	Heavy Equipment, Aerospace, Medical Equipment, Software, Semiconductor, Telecom, Retail, Discrete Manufacturing, Publishing, Biotechnology, Consulting	2
50%	Chemical Processing, Transportation, Power, Natural Gas, Water, Oil, Law Practices, Medical Practices, Construction, Transportation, Pulp & Paper, Ocean Shipping, Hospitality, Broadcast News, Television, Law Enforcement	3
66%	Education, Healthcare, Government Agencies, Farming & Agriculture, Food Processing, Construction, City & Town Municipal Services	4

Figure 3: Failure Predictions by Industry

CONCERNS

In preparation for the October 7th hearing, the Committee staff conducted interviews with a variety of knowledgeable parties. Interviewees included federal agencies with purview over many aspects of business, especially those related to small business and the food industry; large businesses in manufacturing, distribution, and retail; and trade organizations representing a cross section of the business community.

International Business

All global corporations obviously have dependencies on other countries of the world, certainly to export their products, but also to import key supplies and raw materials for end products produced in the U.S. Examples of these dependencies are automobile parts from Southeast Asia, oil from Venezuela and insulin from Denmark. Y2K information is sparse, both on the international companies themselves as well as the infrastructure of the countries where they reside. The U.S. is purportedly the leader in Y2K remediation. This suggests that other countries are dangerously behind. Many have not even begun to address the problem. Thus, we should remain very skeptical about our ability to buy or sell goods from certain parts of the world.

With the main exception of the United Kingdom, the Netherlands and Scandinavia, European countries have taken a strikingly relaxed attitude to Y2K. A main-board director of a leading French bank said, "The year 2000 question is a conspiracy cooked up by the Americans and the British to create a smokescreen and distract attention away from preparations for the single European currency." The situation in Russia and China is even worse than in Europe.

Small and Medium Business (Fewer Than 500 Employees)

In a recent article by the president of NFIB, possible consequences for small- and medium-sized businesses were outlined: automatic funds transfers and direct deposits may be disrupted, fail, or occur at the wrong time; telephonic voice mail may fail; and fax machines may cease to properly transmit to and receive from customers. Mr. Dennis, the NFIB hearing witness, has stated that "more than 330,000 firms risk closing their doors until the problem is fixed, and more than 370,000 others could be temporarily crippled."

Another example of how critical Y2K preparation by small- and medium-sized businesses has become was published in a recent issue of *CIO Communications, Inc* publication. The example highlights the possible indirect consequence of failure to act. Sears Roebuck links 5,000 vendors into their EDI/ telecommunications network. Of those, only 18% have been identified as critical to

Sears' business processes. Thus, 82% of their current business partners – primarily small businesses – were deemed non-critical. As a triage approach to looking at work prioritization and resource allocation in addressing potential Y2K problems is necessary, this same approach is being applied by larger business as they assess Y2K related risk associated with their vendors. Once a vendor has not passed muster in this context, it is possible it will lose the business relationship permanently resulting in a devastating impact on its business.

PHARMACEUTICALS

While generally considered to be one of the leaders in the Y2K remediation effort, pharmaceuticals are caught in the classic squeeze of dependency on suppliers and distributors. Because of FDA regulations intended to protect the public, pharmaceutical companies must have a pre-approved ingredient supplier whose product is registered upon arrival for a particular drug product batch. This means that a constant supply source is critical to the drug manufacturing process. On the sales/distribution side, the companies sell 80% of their product through wholesale drug firms, thus requiring minimal direct sales. It is essential for success that both sides of the equation function effectively through this Y2K window of risk. The pharmaceutical companies are encouraging their col-

leagues in allied businesses to be Y2K prepared.

FOOD INDUSTRY

A \$25 billion (U.S. \$) international food retailer with chain stores in the U.S., Europe, Latin America, and Asia described a Y2K experiment that was conducted in one of its stores. It set the date for the store's computers to Y2K. The effect was "the computers shut down the store in 5 minutes. Everything was shut down. The security systems, the temperature controls, the safes, the front end. Everything."

The Food Marketing Institute published a Y2K white paper that further illustrated possible consequences of failure to act:

- ordering systems will ship the wrong products and incorrect quantities due to date errors in complex calculation routines,

- point-of-sale systems will have wrong prices because the host system selects the wrong item maintenance records,

- customers will be frustrated by frequent shopper systems that don't provide expected rewards due to failures in purchase history date calculations,

- credit cards will be rejected if their expiration dates are beyond Y2K,

- food manufacturers will label products with incorrectly calculated "sell by" dates, causing potential illness,

- pharmacy systems will cancel prescription benefits due to date problems and

- security systems will allow suspicious activity to continue due to date tracking errors.

Any interruption within the farm-to-fork chain can result in a direct loss to those who supply food, likely translating into food shortages and price increases. As is the case with many businesses, food suppliers are increasingly dependent on computerized processing and information exchange. For example, farmers and ranchers use electronic equipment irrigation systems, animal feed systems and transport systems. Processors rely on automated systems that help prepare and package consumer-ready products. Distributors, wholesalers and retailers depend on computer-driven equipment to transport, deliver, store, display and sell food products, and inventory and accounting systems. They rely further on equipment with time-dependent embedded computer chips, such as harvesting equipment; grain elevators; plant, warehouse and truck refrigeration systems; store and plant security systems; and heating, ventilation and air conditioning (HVAC) systems.

Committee efforts to coordinate interviews as well as to secure witnesses for hearings met significant resistance. This resistance and non-responsiveness came from both industry trade organizations/associations as well as major corporations within the retail and manufacturing sides of the food industry. Both food retailers and manufacturers cited numerous reasons for their resistance.

As of the 105th Congress, the general preparedness of the food industry is not clear. The reluctance to provide public witness is certainly disturbing. Put in the context of the Gartner Group's assessment of the food processing and farming/agriculture status, it is possibly alarming. Gartner predicts there is a better than 66% chance of at least one mission-critical failure within each of these industries (see figure 3). In testimony, Gartner's Marcoccio stated, "An industry highly overlooked is agriculture (farming, food processing, transportation/ distribution, and import and export of foods and food bi-products). Several agriculture sub-industries are lagging far behind."

CHEMICAL MANUFACTURING

Overview:

Virtually every consumer product is critically dependent on the chemical manufacturing industry. Cars and trucks, for instance, depend on thousands of chemicals – from polyurethane seat cushions and neoprene

hoses and belts to air bags and nylon seat belts.

Chemical manufacturing is also vital to the overall U.S. economy. In 1997, $69.5 billion in chemicals were exported, which was 10 cents of every export dollar. This topped agriculture's $55.9 billion of exports and aviation's $38.3 billion. In meeting the demands of the of U.S. industry, in 1997, the chemical industry shipped $392 billion of goods. This was 2.1% of the total U.S. economic output, more than any other manufacturing sector. Finally, over 1 million Americans were employed by the industry in 1997.

> *"THOSE MOST AT RISK ARE SMALL AND MEDIUM SIZED COMPANIES."*
>
> *SENATOR GORDON SMITH*

Y2K Vulnerabilities in Chemical Manufacturing

Chemical manufacturers are highly dependent on computers to manage businesses operations and to control manufacturing processes. Thus, they are susceptible to the Y2K problem as well. To quote from the Chemical Process Industries' (CPI) leading publication, <u>Chemical Engineering</u>, "Left unchecked, the Year 2000 problem – called Y2K, for short -- could be catastrophic for the chemical process industries (CPI). The date glitch could cause innumerable shutdowns and horrific accidents. Indeed, a manufacturer's process-control system could be stymied by "00" and shut down altogether on New Year's Eve."

An example has already occurred. "At midnight on New Year's Eve 1996 at Tiwai Point in South Island, New Zealand, all [660] of the smelting potline process control computers stopped working instantly, simultaneously, and without warning. The Bell Bay plant in Tasmania shut down two hours later - midnight local time."

Major Initiatives

While the large companies have substantial ongoing Y2K programs, at this time, the only major initiative across the industry that the Committee is aware of is a community workshop convened at the Committee's request on December 18, 1998. The committee has requested that the United States Chemical Safety and Hazard Investigation Board (CSB) investigate

- the extent of the Y2K problem in the automation (both supervisory control systems and embedded systems) that monitors and controls the manufacture of toxic and hazardous chemicals;

- the awareness of large, medium and small companies within the industry of the Y2K threat;

- CPI progress to date in addressing the Y2K problem;

- the impact of this problem on the "Risk Management Plans" required in June 1999 under the

Clean Air Act of 1990;

- the role the Federal agencies are playing in preventing disasters due this problem; and

- actions to prevent major disasters due to toxic or hazardous chemical releases as the Y2K approaches.

Assessments

There are very few general Y2K assessments of the CPIs. The Gartner Group provides one that surfaced in the Committee's investigations. Gartner develops its predictions on Y2K from a quarterly survey of over 15,000 companies in 87 countries. It organizes its survey output into 26 industries, one of which is CPI. At the October 7, 1998 Hearing on General Business and the Year 2000 Problem, Lou Marcoccio of the Gartner Group placed CPI in Gartner's category III rating. In this category, Gartner predicts that about 50% of the companies will experience at least one Y2K mission-critical failure. Gartner's definition of a mission-critical failure is any business dependency, which, if it were to fail, would cause any of the following:

- a shutdown of business, production, or product delivery operations,

- health hazard to individuals,

- considerable revenue loss,

- a significant litigation expense or loss or

- Significant loss of customers or revenue.

The Chemical Manufacturer's Association (CMA) met with Committee staff following the October 7th hearing and related that they were prompted by Gartner's testimony to do their own, independent industry survey. Their survey has begun, but no results are available at this time.

Concerns

The Committee currently has two concerns about CPI. First is the potentially great public health risk posed by the accidental release of toxic or hazardous chemicals. The Committee is optimistic that from what it has learned, the very large CPI companies are well along in their Y2K preparations. However, as in other areas the Committee has looked into, small to medium firms are most likely unprepared. What's most bothersome here is that a small firm may be processing, transporting or storing enough dangerous chemicals to be a health or safety threat to a sizable population.

The second concern has to do with the publicly disclosed risk management plans required of firms in this industry in April 1999. These plans were required by the amended Clean Air Act of 1990 to provide citizens with accurate information about potential chemical hazards in their communities. These plans were ini-

tiated before the country was paying attention to the Y2K problem. The Committee feels that if Y2K is not considered as a potential cause of accidental release of chemicals that may be toxic or hazardous, these plans will not be credible or accepted by the public reviewing them.

In summary, the Committee is concerned that at this moment the impact of Y2K on chemical process safety may be a neglected issue.

The Committee is hopeful that the President's Council on Year 2000 Conversion's assessments, the CSB-convened workshop in December 1998, and the Chemical Manufacturers Association survey will provide more assurance in the first quarter of 1999. The Committee will be watching these developments carefully and will be taking further action if more information is not forthcoming.